

## ARTICLE 34 AMENDMENT

JC20 Rec'd PCT/PTO 06 MAY 2005

1. (Amended) A dry mixture of an aggregate material prepared by the steps of:

mixing aggregate materials, one or more kind of a water-soluble binder that is soluble by water at ambient temperatures, and water, to make a mixture;

evaporating the moisture within said mixture during said mixing step such that said mixture is dried and has single-grain structures; and

wherein additional water is added to said dry mixture to form a molding material for molding a mold with said dry mixture.

2. (Amended) A dry mixture of an aggregate material prepared by the steps of:

mixing aggregate materials, one or more kind of a water-soluble binder that is soluble by water at ambient temperatures, and water, to make a mixture;

evaporating the moisture within said mixture during said mixing step such that said mixture is dried and has single-grain structures;

adding additional water to said dry mixture;

stirring said dry mixture with said additional water to cause it to foam in order to form a molding material for molding a mold with said dry mixture.

3. (Amended) A dry mixture of an aggregate material as recited in claim 1 or 2, wherein said water-soluble binder is a polyvinyl alcohol having a degree of hydrolysis from 80 mol% to 95 mol% or its derivative; or an  $\alpha$  starch or dextrin or its derivative; or both.

4. (Amended) A dry mixture of an aggregate material as recited in any of claims 1, 2, and 3, wherein said mixture contains from 0.1 wt% to 5.0 wt% of said water-soluble binder based on the total weight of said aggregate granular material.

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5. (Amended) A dry mixture of an aggregate material as recited in any of claims 1-4, wherein said dry mixture further includes a lubricant.

6. (Amended) A dry mixture of an aggregate material prepared by the steps of:

mixing an aggregate granular material, a water-soluble binder that is soluble by water at an ambient temperature, a cross-linker that is capable of cross-linking with said water-soluble binder, and water;

evaporating the moisture within said mixture during said mixing step to prevent the cross-linking reaction between said water-soluble binder and said cross-linker such that said mixture is dried and has single-grain structures;

adding additional water to said dry mixture; and

freezing said dry mixture with the additional water to maintain said single-grain structures in said mixture in order to form a molding material for molding a mold with said dry mixture.

7. (Amended) A dry mixture of an aggregate material prepared by the steps of:

mixing an aggregate granular material, a water-soluble binder that is soluble by water at an ambient temperature, a cross-linker that is capable of cross-linking with said water-soluble binder, and water;

evaporating the moisture within said mixture during said mixing step to prevent the cross-linking reaction between said water-soluble binder and said cross-linker such that said mixture is dried and has single-grain structures;

adding additional water to said dry mixture; and

stirring said dry mixture with said additional water to cause it to foam in order to form a molding material for molding a mold with said dry mixture.

8. (Amended) A dry mixture of an aggregate material as recited in claim 6 or 7, wherein said water-soluble binder is a polyvinyl alcohol having a degree of hydrolysis from 80 mol% to 95 mol% or its derivative; or an  $\alpha$  starch or dextrin or its derivative; or both.

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9. (Amended) A dry mixture of an aggregate material as recited in any of claims 6, 7, and 8, wherein said mixture contains from 0.1 wt% to 5.0 wt% of said water-soluble binder based on the total weight of said aggregate granular material.
10. (Amended) A dry mixture of an aggregate material as recited in any of claims 6-10, wherein said water-soluble binder or water-soluble binder solution is selected from a carboxylic compound.
11. (Amended) A dry mixture of an aggregate material as recited in claim 10, wherein said carboxylic compound is selected from the group consisting of an oxalic acid, a maleic acid, a succinic acid, a citric acid, butane-tetracarboxylic acid, a methyl vinyl ether-maleic anhydride copolymer, and an isobutylene-maleic anhydride copolymer.
12. (Amended) A dry mixture of an aggregate material as recited in any of claims 6-10, wherein said dry mixture further includes a lubricant.
13. (Amended) A molding process for molding a mold using said dry mixture as recited in any of claims 1, 3, 4, and 5, wherein said additional water has a normal temperature, and wherein said dry mixture has an ambient temperature, said process comprising the steps of:  
freezing said dry mixture with said additional water such that said single-grain structures in the mixture are maintained;  
charging said frozen mixture into a molding space;  
evaporating the moisture within said charged mixture to cure said charged mixture to mold a mold with said cured mixture; and  
removing said molded mold from said molding space.
14. (Amended) A molding process for molding a mold using said dry mixture as recited in any of claims 1, 3, and 4, and 5, wherein said additional water has a normal temperature, and wherein said dry mixture has an ambient temperature, said process comprising the steps of:

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freezing said mixture with said additional water such that said mixture has single-grain structures;

adding a lubricant to said frozen mixture;

charging said frozen mixture with said lubricant into a molding space;

evaporating the moisture within said charged mixture to cure said charged mixture to mold a mold with said cured mixture; and

removing said molded mold from said molding space.

15. (Amended) A molding process as recited in claim 13 or 14, said process further comprising the steps of:

before said step of charging said frozen mixture into said molding space, temporarily storing in a vessel a quantity of said frozen mixture that is greater than or equal to the quantity of said frozen mixture to be charged one time into said molding space; and

stirring said mixture within said vessel in a condition in which the frozen moisture within said mixture cannot be thawed, to maintain said single-grain structures in the mixture to be charged into said molding space.

16. (Amended) A molding process for molding a mold, said process comprising the steps of:

stirring said dry mixture with said additional water as recited in any of claims 2,3, and 4 to cause it to foam;

charging said foamed mixture into a molding space;

evaporating the moisture within said charged mixture to cure said charged mixture to mold a mold with said cured mixture; and

removing said molded mold from said molding space.

17. (Amended) A molding process for molding a mold, said process comprising the steps of:

freezing said dry mixture with said additional water as recited in any of claims 6, 8, 9, 10, and 11 such that said mixture has single-grain structures;

charging said frozen mixture into a molding space;

evaporating the moisture within said charged mixture to cure said

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charged mixture to mold a mold with said cured mixture;  
causing a cross-linking reaction between said water-soluble binder and said cross-linker; and  
removing said molded mold from said molding space.

18. (Amended) A molding process for molding a mold, said process comprising the steps of:

freezing said dry mixture with said additional water as recited in any of claims 6, 8, 9, 10, and 11 such that said mixture has single-grain structures;  
charging said frozen mixture into a molding space;  
evaporating the moisture within said charged mixture to cure said charged mixture to mold a mold with said cured mixture;  
removing said molded mold from said molding space; and  
causing a cross-linking reaction between said water-soluble binder and said cross-linker.

19. (Amended) A molding process for molding a mold, said process comprising the steps of:

freezing said mixture with said additional water as recited in any of claims 6, 8, 9, 10, and 11 such that said mixture has single-grain structures;  
adding a lubricant to said mixture;  
charging said frozen mixture with said lubricant into a molding space;  
evaporating the moisture within said charged mixture to cure said charged mixture to mold a mold with said cured mixture;  
causing a cross-linking reaction between said water-soluble binder and said cross-linker; and  
removing said molded mold from said molding space.

20. (Amended) A molding process for molding a mold, said process comprising the steps of:

freezing said mixture with said additional water as recited in any of claims 6, 8, 9, 10, and 11 such that said mixture has single-grain structures;  
adding a lubricant to said mixture;

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charging said frozen mixture with said lubricant into a molding space;  
 evaporating the moisture within said charged mixture to cure said  
 charged mixture to mold a mold with said cured mixture;  
 removing said molded mold from said molding space; and  
 causing a cross-linking reaction between said water-soluble binder and  
 said cross-linker.

21. (Amended) A molding process as recited in any of claims 17-20, said process further comprising the steps of:

before said step of charging said frozen mixture into said molding space,  
 temporarily storing in a vessel a quantity of said frozen mixture that is  
 greater or equal to the quantity of said frozen mixture to be charged one time  
 into said molding space; and

stirring said mixture within said vessel in a condition in which the frozen  
 moisture within said mixture cannot be thawed, to maintain said single-grain  
 structures in the mixture to be charged into said molding space.

22. (Amended) A molding process for molding a mold, said process comprising the steps of:

stirring said mixture with said additional water as recited in any of  
 claims 7-11 to cause it to foam;

charging said foamed mixture into a molding space;

evaporating the moisture within said charged mixture to cure said  
 charged mixture to mold a mold with said cured mixture;

causing a cross-linking reaction between said water-soluble binder and  
 said cross-linker; and

removing said molded mold from said molding space.

23. (Amended) A molding process for molding a mold, said process comprising the steps of:

stirring said mixture with said additional water as recited in any of  
 claims 7-11 to cause it to foam;

charging said foamed mixture into a molding space;

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evaporating the moisture within said charged mixture to cure said charged mixture to mold a mold with said cured mixture;  
removing said molded mold from said molding space; and  
causing a cross-linking reaction between said water-soluble binder and said cross-linker.

24. (Added) A core mold for casting an aluminum alloy, said core mold being molded by means of said molding process as recited any of claims 17-23.

25. (Amended) A core mold is molded with said molding process as recited any of claims 17-23, wherein the surface of said core mold is coated with a mold wash.

*Appendix sheet*